



Charlotte Mason's House of Education,  
Scale How, Ambleside, UK, 2009

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## FOODSTUFFS IN REFERENCE TO CHILDREN'S TEETH.

BY T. WILSON HOGUE, BOURNEMOUTH.

HEALTH in man depends upon the proper performances of three functions:—1st, tissue change; 2nd, removal of waste; 3rd, supply of new material.

It is on the last of these functions I wish to say a few words and more especially as regards the food of children. If we wish our children to have good, strong frames and good teeth we must supply them with proper food, and see also that in every way their general health is looked after.

Here I should like to say that it has been my experience that very many children suffer in health from eating too rapidly. It is of the utmost importance that plenty of time be spent over each meal, so that the food may be thoroughly masticated and mixed with the saliva before entering the stomach. I believe, in these days of hurry and bustle, much of the indigestion that exists is caused by insufficient mastication and insalivation.

Most children get food enough to nourish them properly, and it is often from want of mastication, fresh air and exercise that the food is not properly assimilated. No doubt a great deal of ignorance exists about the all-important subject of feeding, and I have thought it well to ask you to kindly bear with me for a little time if I direct your attention to the relative digestibility or otherwise of the most ordinary varieties of food.

I am not going to advocate any radical change in the diet of children; what has been tried and found efficient for hundreds of years is not to be lightly set aside. At the age of seven months the infant begins to require something more than is afforded by the maternal milk. The capability of digesting starchy food now commences and the milk can be thickened with baked wheat flour and lentil flour. Robbs' biscuits, Nestle's milk food and Neave's food for infants are all valuable foods, especially Neave's. Isinglass and gelatine are also good to use occasionally for thickening.

For a child about eighteen months old, three meals and one supplement of beef-tea or milk and a biscuit, either between breakfast and dinner or just before bedtime, provided the child takes little at its last meal. About two ounces of cooked meat daily should be sufficient up to  $2\frac{1}{2}$  years. Animal foods, being the flesh of animals, have decided advantages. They contain the same chemical elements as the bodies they are destined to feed. They are rich in albuminous or nitrogenous substances combined with a certain amount of fat—they are more easily digested and assimilated than vegetable foods. Their disadvantage is the absence of starch. The flesh of young animals is less digestible than that of more mature ones—veal and lamb than beef and mutton. A four-year-old ox and a three-year-old sheep yield the best beef and mutton. The flesh of a female has a finer grain and is more delicate than that of the male. It is usual in slaughtering animals to allow the blood to drain away. This of course involves a loss of nutritive material but improves the appearance of the meat, gives it delicacy of flavour, and enables it to be kept longer. Beef is perhaps the most extensively used and most nutritious of all animal foods. Veal is less digestible and less nutritious than either beef or mutton. Mutton is generally considered to be more easy of digestion than beef. Venison from young deer is very tender, short-fibred, dark-coloured, savoury, and is very digestible. It is, however, rather too stimulating and highly flavoured for delicate stomachs. Pork is the most difficult of meats to digest. Bacon is less likely to disagree than pork. The brains and tongues of animals are intimately permeated by fat, and so are rather difficult of digestion by weak stomachs. Liver, tripe, kidneys, and the heart of animals are all difficult of digestion and unfitted for the food of children. Sweetbreads are considered easy of digestion, and so are poultry and game. Rabbits when old become hard and dry in cooking, and are not easily digested, but make excellent soup. The large amount of fat in the duck and goose render them unsuitable except for strong digestions. Fish, as the sole, whiting, turbot, brill, and flounder, are very easy of digestion, and are of great nutritive value, and are very quickly assimilated. Many speak of fish as brain food on account of the phosphorus contained in it, but this reputation



is said to be gained more by its being readily digested. Louis Agassiz says: "It is refreshing to the organism, especially after intellectual labour; not that its use can turn an idiot into a wise or witty man, but a fish diet cannot be otherwise than favourable to brain development." Milk is remarkable in containing all the elementary substances necessary for the support and maintenance of the human body. The only other complete food afforded by the animal kingdom is eggs. Butter, when fresh, is the most digestible of animal fats, but when rancid or when its fatty acids have been set free by heat, as in cooking, it is often badly tolerated by the stomach. There are many varieties of cheese. Cheese is an exceedingly valuable, nutritive, and economical food on account of the large proportion of nitrogen it contains—twice as much, weight for weight, as meat. It has been regarded as a food difficult of digestion, and this is probably correct as regards the poorer, harder cheeses, but the softer, richer and finer flavoured and less compact cheeses by no means merit this reproach. Eggs, if taken raw or lightly cooked, are easily digested, but if cooked hard are difficult of digestion. Wheat is the most largely used and cultivated of all the cereal grains. The whole of the grain is digestible after the two outer coats have been removed. The nitrogenous substances exist in the form of albumen and gluten. Its chief defect as a food is the small amount of fat it contains. No doubt for children, nearly whole-meal bread is best on account of the greater amount of insoluble matter it contains, but it is very necessary that the flour be ground very fine, and that the bread be well raised and not damp and sticky. Belben's meals and germ flour are all very good.

For those with delicate digestion I am not in favour of the use of whole wheat bread; the branny products are exceedingly apt to give indigestion, and are very irritating. Macaroni and vermicelli are made from hard Italian wheats, rich in gluten, and are valuable foods. Barley meal is very nutritious. The Greeks and Romans trained their athletes on this food. It is not so suitable for bread as wheat flour as the bread is heavier. Oatmeal is a highly nutritious food and very suitable for children as porridge and gruel. Porridge must be thoroughly cooked. Maize is a highly nutritious

grain, and contains the largest amount of fat of all the cereals. Rice is a poor food in itself, being deficient in nitrogenous, fatty and mineral substances. The ready digestibility of its starch granules renders it a very suitable food for persons with an irritable intestinal mucous membrane. It should not be boiled, but steamed, as boiling removes some of the small amount of nitrogenous and saline matter it contains. It is a valuable food when mixed with other substances rich in fats and albuminates. Leguminosæ, such as beans, peas and lentils, surpass all other farinaceous food in the large amount of nitrogenous substances they contain. They also contain albumen and other proteids and starch. Lentils contain about double the amount of nitrogenous substances that wheat does, and also contain iron and phosphorus. Peas and beans also contain phosphorus. Eaten with animal fat they constitute a highly nourishing food. Their defects as compared with the cereals are their relative indigestibility. Potatoes form a palatable and easily digested food, and are chiefly valuable for the large percentage of starch they contain. To avoid the waste of salt, potatoes are best cooked in their skins. Arrowroot, tapioca and sago are easily digested forms of starch.

*We come to vegetables now.* Beetroot is a most valuable vegetable. Of green vegetables cauliflower and broccoli are the most delicate and digestible of the cabbage tribe. Spinach is almost wholly indigestible, and is useful as an aperient. Sea kale, cooked celery, asparagus are other forms of delicately-flavoured and easily digested vegetables.

A word about tea and coffee. Both these beverages have an inhibitory or retarding effect upon salivary and peptic digestion. The best way to minimise this inhibitory effect is to use them weak and sparingly, and to drink after and not with a meal. Adding a little carbonate of soda, 10 grs. to 1 oz. of dry tea leaf, will entirely remove this retarding effect upon digestion. Cocoa and chocolate present a convenient and palatable form of a highly nourishing food, but when taken for a length of time sometimes cause liver disorder.

The following is a good diet, say after the child has reached  $3\frac{1}{2}$  years and during childhood. Breakfast: Milk, porridge and cream, bread and butter, and one dish only each day of fresh fish, eggs lightly cooked, or chicken hash. Dinner:



Clear soup, meat roasted or boiled and cut into thin pieces, bread and butter, and two dishes each day of potatoes baked and mashed, stewed celery, cauliflower, hominy, maccaroni (plain), peas, French beans; junket, rice and milk, or other light puddings. Supper: Milk, toast or bread and butter and stewed fruit. As to quantity, if a child eats slowly and masticates thoroughly he may generally be trusted to properly satisfy his appetite at each meal. Fried food should be avoided, salt, but no other condiment, should be allowed, and pure water only should be given to drink.

Those who are entrusted with the care of the young from 10 to 18 years of age are very apt to pay more attention to their intellectual culture than their physical development. This period of life is one of remarkable physical activity, so that there is a constant and twofold demand for appropriate food—the demand of the growing organs and the demand connected with muscular activity and mental training. At no period of life is the demand greater.

Growing children also digest rapidly, and provision should always be made for some plain and wholesome food such as bread and butter to be accessible for the hungry boy or girl at other than the ordinary meal times.

The food at school should contain a proper proportion of albuminates for the development of the muscles, and also fat and starch to develop heat and energy. It is difficult at school to consider the likes and dislikes of children. Some cannot digest fats or starches, and indeed the mere sight of fat prevents some from eating. Many children who cannot touch the fat of roast or boiled mutton eagerly devour suet pudding with sugar or jam. It is most important that ample time be allowed at meals for the proper mastication of the food, and there should be no feeling whatever in the dining-room of hurry. No lessons should be done in the morning nor exercise taken on an empty stomach. Meat should be given twice a day, at breakfast and dinner, during this time of active growth, and in the form of butcher's meat, fish, bacon or eggs.

The teeth consist of  $96\frac{1}{2}$  per cent. of earthy matter and  $3\frac{1}{2}$  of animal. The earthy matter is phosphate of lime, carbonate of lime, and phosphate of magnesia principally. There is no tissue in the body that does not contain lime. All cereals,

vegetables, leguminosæ, and milk and ripe fruit are rich in these salts. Chloride of sodium also occurs in all the tissues and fluids of the body, and is absolutely necessary to existence. Other salts such as citrates, acetates, lactates become converted into carbonates in the body and confer upon the body that alkalinity which appears to be necessary.

In our army the diet per day for our soldiers is:—Meat, 12 oz.; bread, 24 oz.; potatoes, 16 oz.; green vegetables, 8 oz.; milk, 3.25 oz.; sugar, 1.23 oz.; salt, .25 oz.; coffee, .33 oz.; tea, .16 oz.

The French and German dietary for soldiers differ in this respect, that they give less meat and more bread than the English diet.

In proportion, children require more food than adults. Raisins I consider bad for children's teeth, as they are very apt to stick between the teeth and soon become acid from fermentation.

I desire to acknowledge my great indebtedness to Dr. Burney Yeo and the late Sir William Roberts, for their valuable researches on these subjects.

To sum up, I would say that food which promotes the general health of children and the growth of the skeleton is the best diet for the teeth, which are of course among the bones of the body.